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(54) **LOW-VOLTAGE, VERY-LOW-POWER CONDUCTANCE MODE NEURON**

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(52) **U.S. Cl.** **706/15**

(58) **Field of Search** 706/15, 16, 25, 706/26, 27, 33, 38

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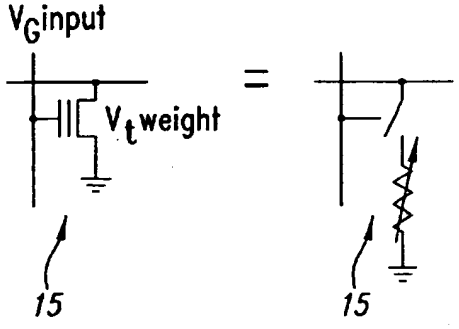
(57) **ABSTRACT**

A neural network including a number of synaptic weighting elements, and a neuron stage; each of the synaptic weighting elements having a respective synaptic input connection supplied with a respective input signal; and the neuron stage having inputs connected to the synaptic weighting elements, and being connected to an output of the neural network supplying a digital output signal. The accumulated weighted inputs are represented as conductances, and a conductance-mode neuron is used to apply nonlinearity and produce an output. The synaptic weighting elements are formed by memory cells programmable to different threshold voltage levels, so that each presents a respective programmable conductance; and the neuron stage provides for measuring conductance on the basis of the current through the memory cells, and for generating a binary output signal on the basis of the total conductance of the synaptic elements.

6 Claims, 8 Drawing Sheets



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